

## **EXPOSURE CONTROL FOR PHASE SHIFTING PHOTOLITHOGRAPHIC MASKS**

### **ABSTRACT**

Mask and integrated circuit fabrication approaches are described to facilitate use of so called “full phase” masks. This facilitates use of masks where substantially all of a layout is defined using phase shifting. More specifically, exposure settings including relative dosing between the phase shift mask and the trim masks are described. Additionally, single reticle approaches for accommodating both masks are considered. In one embodiment, the phase shifting mask and the trim mask are exposed using the same exposure conditions, except for relative dosing. In another embodiment, the relative dosing between the phase and trim patterns is  $1.0:r$ ,  $2.0 < r < 4.0$ . These approaches facilitate better exposure profiles for the resulting ICs and can thus improve chip yield and increase throughput by reducing the need to alter settings and/or switch reticles between exposures.

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